

## CLAIMS

[30020466-2]

1. A method for identifying a network-wide set of paths potentially taken by packets in a communications network, comprising the steps of:
  - 5 collecting packets containing information indicative of the interconnection of the network, and of its interconnection with other networks;
  - detecting the contents of the selected packets;
  - using the detected contents to identify the network-wide set of routers and sub-networks and their interconnections, that are traversed by communications within the
  - 10 network; and
  - providing an output indicative of any selected part of the network-wide set of routers and sub-networks and their interconnections.
2. The method of claim 1, including the step of using the detected contents to determine
- 15 the functionality associated with the identified routers and sub-networks, and the cost metrics of the identified interconnections, which are traversed by communications within the network.
3. The method of claim 2, including the step of using the detected contents to determine
- 20 a network-wide set of potential paths, both through the network and connecting the network with other networks, which are traversed by communications within the network.
4. The method of claim 3, including the step of using the detected contents to determine
- a set of default paths, as defined by the cost metrics, which are traversed by communications
- 25 within the network.
5. The method of claim 3, including the steps of:
  - querying the routers based upon their predetermined functionality; and
  - using the results of the querying to determine if packet classification is occurring at
  - 30 network ingress routers and if any alternative logical paths to the default path are traversed by communications within the network.
6. The method of claim 3, including the step of using the detected contents to determine
- alternative logical paths that could be traversed by communications within the network.
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7. The method of any two or all three of claims 4, 5 and 6, including the step of generating a comparison between the determined paths.
8. The method of claim 5, including the step of querying the routers for properties

associated with the determined paths that are indicative of predetermined routing objectives for the paths.

9. The method of claim 7 and claim 8, including the step of using the comparison to  
5 determine alternative logical paths to those currently in use that would meet the predetermined routing objectives.

10. The method of claim 9, including the step of recommending an alternative set of logical paths that meets the predetermined objectives.

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11. The method of any one of the preceding claims, wherein packets are collected by monitoring packets traversing at least one link in the network.

12. Apparatus for identifying a network-wide set of paths potentially taken by packets in a  
15 communications network, comprising:

a collector for collecting packets containing information indicative of the interconnection of the network, and of its interconnection with other networks;

a detector for detecting the contents of the selected packets;

20 an identifier for using the detected contents to identify the network-wide set of routers and sub-networks and their interconnections, that are traversed by communications within the network; and

an output for providing an indication of any selected part of the network-wide set of routers and sub-networks and their interconnections.

25 13. The apparatus of claim 12, wherein the identifier uses the detected contents to determine the functionality associated with the identified routers and sub-networks, and the cost metrics of the identified interconnections, which are traversed by communications within the network.

30 14. The apparatus of claim 13, wherein the identifier uses the detected contents to determine a network-wide set of potential paths, both through the network and connecting the network with other networks, which are traversed by communications within the network.

35 15. The apparatus of claim 14, wherein the identifier uses the detected contents to determine a set of default paths, as defined by the cost metrics, which are traversed by communications within the network.

16. The apparatus of claim 14, including a query generator for querying the routers based

upon their predetermined functionality, wherein the identifier uses the results of the querying to determine if packet classification is occurring at network ingress routers and if any alternative logical paths to the default path are traversed by communications within the network.

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17. The apparatus of claim 14, wherein the identifier uses the detected contents to determine alternative logical paths that could be traversed by communications within the network.

10 18. The apparatus of any two or all three of claims 15, 16 and 17, wherein the identifier generates a comparison between the determined paths.

15 19. The apparatus of claim 16, wherein the query generator queries the routers for properties associated with the determined paths that are indicative of predetermined routing objectives for with the paths.

20 20. The apparatus of claim 18 and claim 19, wherein the identifier uses the comparison to determine alternative logical paths to those currently in use that would meet the predetermined routing objectives.

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21. The apparatus of claim 20, wherein the identifier recommends an alternative set of logical paths that meets the predetermined objectives.

25 22. The apparatus of any one of claims 12 to 21, including a monitor for monitoring packets traversing at least one link in the network.